

Work Order ID 110087

December-17-13 9:07:53 AM

D 4092-1
B 110087

110087

Page 1

Item ID: D4092-1

Accept

N19000040100

Setup Start

NS1

Revision ID:

Stop

NS2

Item Name: Maintenance Step

Start Date: 12/17/13 Start Qty: 16.00

16

Cust Item ID:

Required Date: 12/17/13 Req'd Qty: 16.00

16

Customer:

Reference:

Run Start

NR1

Approvals:

Process Plan:

Date:

Tooling:

Date:

Stop

NR2

QC:

Date:

SPC (Y/N):

Date:

Sequence ID/
Work Center ID

Operation
Description

Set Up/
Run Hours

Tool ID

Tool #

Plan
Code

Accept
Qty

Reject
Qty

Reject
Number

Insp.
Stamp

Draw Nbr

Revision Nbr

D4092

B

100

Cut blanks as per folio

0.00

100

Bandsaw

Memo

0.00

Jeaspa Bandsaw

16 0 NH 13/12/31

110

0.00

110

HAAS 1

Memo

0.00

HAAS CNC vertical machine #1

Mill as per Dwg and Folio FA935

Dwg Rev: B

Folio rev:

Deburr

16 1 NH 14/01/04

December-17-13 9:07:53 AM

110087

Page 2

N900040100

Setup Start *NS1*

Stop *NS2*

Cust Item ID:

16

16

Customer:

Reference:

Run Start *NR1*

Stop *NR2*

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

**Insp.
Stamp**

0.00

120

QC

Memo

0.00

Quality Control

130

0.00

130

QC

Memo

0.00

Quality Control

140

0.00

140

HandFinish

Memo

0.00

Hand Finishing

Work Order ID 110087

December-17-13 9:07:53 AM

110087

Page 3

Item ID: D4092-1 Accept ***N900040100*** Setup Start ***NS1***
 Revision ID: Stop ***NS2***
 Item Name: Maintenance Step
 Start Date: 12/17/13 Start Qty: 16.00 ***16*** Cust Item ID:
 Required Date: 12/17/13 Req'd Qty: 16.00 ***16*** Customer:
 Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start ***NR1***
 QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
155 *155* HandFinish Hand Finishing	Wing Walk as per dwg QSI005 4.4 Batch Memo	11/27/13 0.00				16x	d	JK	14/01/13
160 *160* QC Quality Control	QC3- Inspect Part Finish Memo	DAS 27 9-89 14/1/14 0.00				16			
170 *170* Packaging Packaging	Identify as per dwg & Stock Location: Memo	5/27/10 0.00				18	14/01/14	DAS 32 9-89	

Work Order ID 110087

December-17-13 9:07:53 AM

110087

Page 4

Item ID: D4092-1

Accept

N900040100

Setup Start

NS1

Revision ID:

Item Name: Maintenance Step

Stop

NS2

Start Date: 12/17/13 Start Qty: 16.00

16

Cust Item ID:

Required Date: 12/17/13 Req'd Qty: 16.00

16

Customer:

Reference:

Approvals:

Process Plan: _____

Date: _____

Tooling: _____

Date: _____

Run Start

NR1

QC: _____

Date: _____

SPC (Y/N): _____

Date: _____

Stop

NR2Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run Hours

Tool ID

Tool #

Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

180

QC21- Final Inspection - Work Order Release

0.00

180

QC

Memo

0.00

Quality Control

14-01-1514-01-14

Picklist Print

December-17-13 9:07:53 AM

Page 1

Work Order ID: 110087

Parent Item: D4092-1

Parent Item Name: Maintenance Step

Start Date: 12/17/13

Required Date: 12/17/13

Start Qty: 16.00

Required Qty: 16.00

Comments: Ipp Rev:A New Issue 10-05-31 JLM Verified By:DD
639 JLM VERIFIED BY:DD

IPP REV:B AS PER ECN 11-

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
D2761-108 Extrusion (HPK)		Manufactured	No			100	f	537.9400	2.5	42.105262			

Location

Loc Qty

Loc Code

MAT006

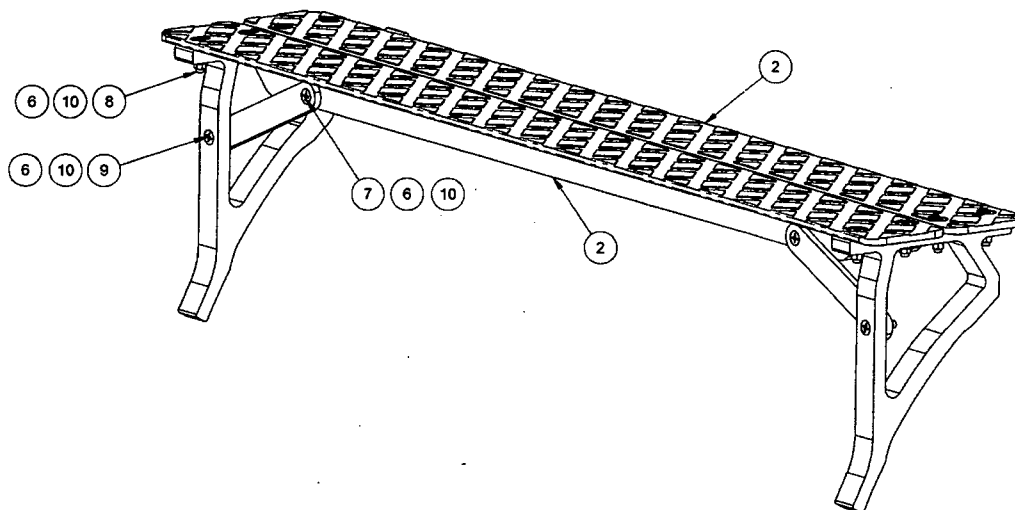
537.94

80206

537.94

42.35

MH 12/17/13



D4092-041 MAINTENANCE STEP ASSEMBLY

B

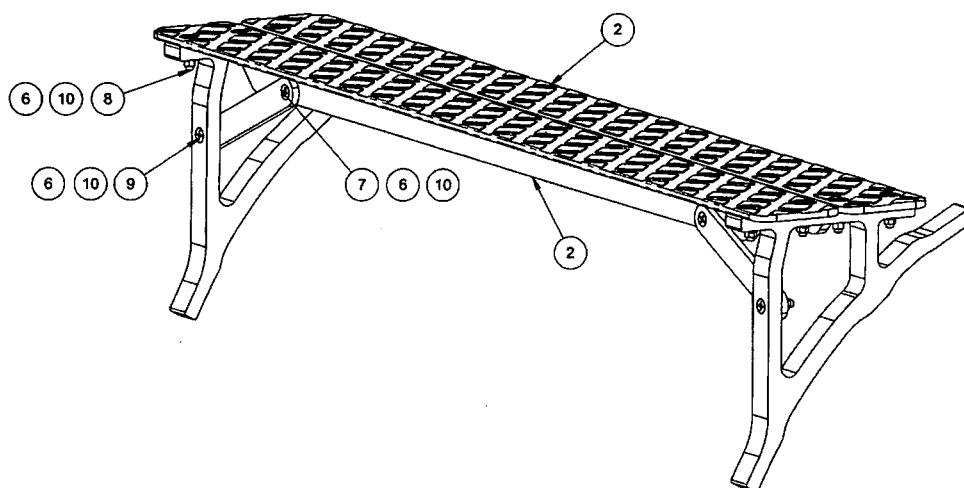
ITEM	QTY -041	PART NUMBER	DESCRIPTION
1	X	D4092-041	MAINTENANCE STEP ASSEMBLY
2	2	D4092-1	MAINTENANCE STEP
3	1	D4093-1	BRACKET
4	1	D4093-3	BRACKET
5	2	D4093-5	BRACE
6	12	MS21042L3	NUT
7	2	MS24694-S54	SCREW
8	8	MS24694-S55	SCREW
9	2	MS24694-S56	SCREW
10	12	NAS1149D0332J	WASHER

110087

RELEASED
2011-09-22

B	REDRAWN; LOWERED FOR AESTHETICS	RF	11.07.27
A	NEW ISSUE	RF	10.09.16
REV.	DESCRIPTION	BY	DATE
DESIGN	RF	DART AEROSPACE USA, INC. KENT, WA	
DRAWN	RF		
CHECKED	RF	DRAWING NO.	REV. B
MFG. APPR.	RF	D4092	SHEET 1 OF 6
APPROVED	RF	TITLE	SCALE
DE APPR.	RF	MAINTENANCE STEP ASS'Y	NTS
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ITEM	QTY -042	P/N	DESCRIPTION
1	X	D4092-042	MAINTENANCE STEP ASSEMBLY
2	2	D4092-1	MAINTENANCE STEP
3	1	D4093-1	BRACKET
4	1	D4093-3	BRACKET
5	2	D4093-5	BRACKET
6	12	MS21042L3	NUT
7	2	MS24694-S54	SCREW
8	8	MS24694-S55	SCREW
9	2	MS24694-S56	SCREW
10	12	NAS1149D0332J	WASHER

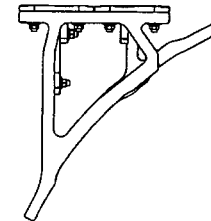
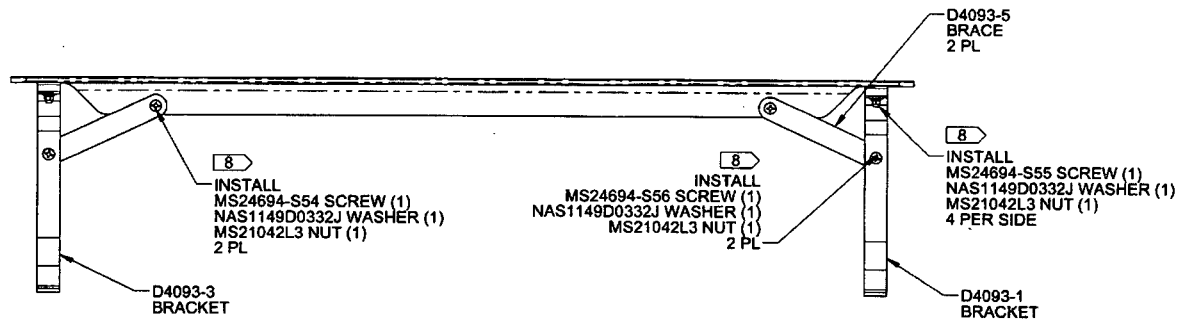
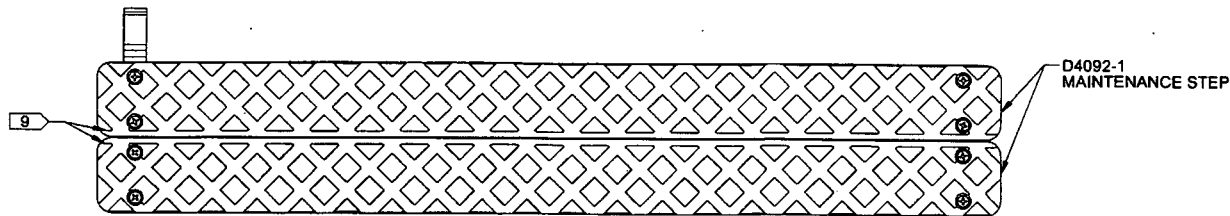


D4092-042 MAINTENANCE STEP ASSEMBLY



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2011-09-23
JW

DESIGN	RF	DART AEROSPACE USA, INC. KENT, WA	
DRAWN	RF		
CHECKED	<i>140</i>	DRAWING NO.	REV. B
MFG. APPR.	<i>21</i>	D4092	SHEET 2 OF 6
APPROVED	<i>140</i>	TITLE	SCALE
DE APPR.	<i>H</i>	MAINTENANCE STEP ASS'Y	NTS
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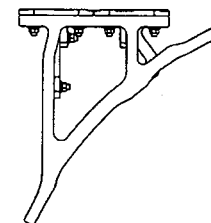
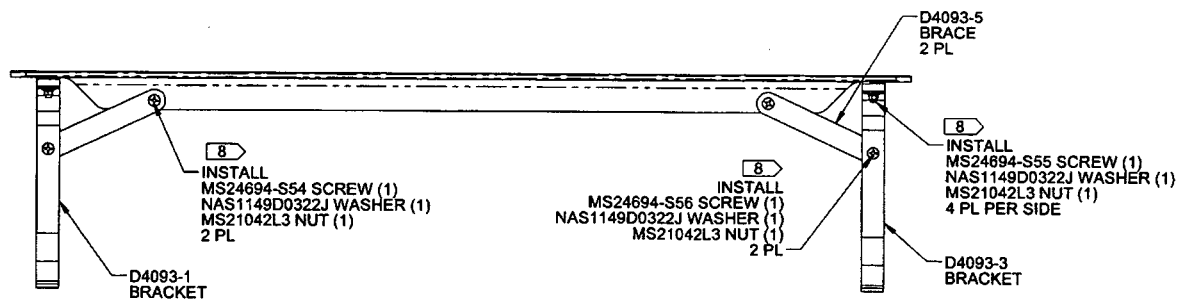
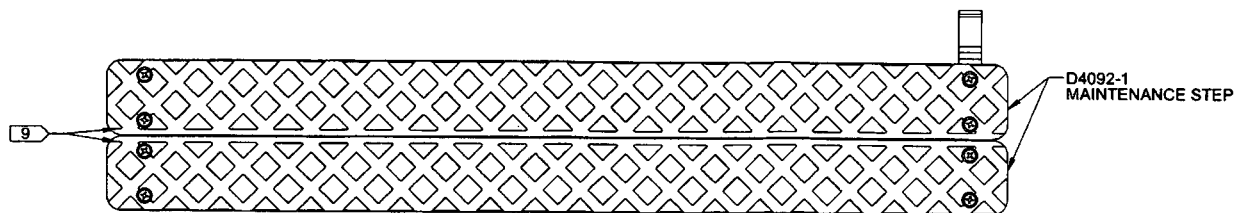
D4092-041 MAINTENANCE STEP ASSEMBLY

NOTES:

- 1) MATERIAL: N/A
- 2) FINISH: N/A
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: PER QSI 044 6.1
- 7) WEIGHT: 5.37 lbs
- 8) TORQUE SCREWS UP TO 15-25 in-lb (1.7-2.8 N-m)
- 9) GRIP CUTOUT TOWARD CENTER

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2011-09-22

DESIGN	RF	DART AEROSPACE USA, INC.	
DRAWN	RF	KENT, WA	
CHECKED	140	DRAWING NO.	REV. B
MFG. APPR.	21	D4092	SHEET 3 OF 6
APPROVED	140	TITLE	SCALE
DE APPR.	14	MAINTENANCE STEP ASS'Y	NTS
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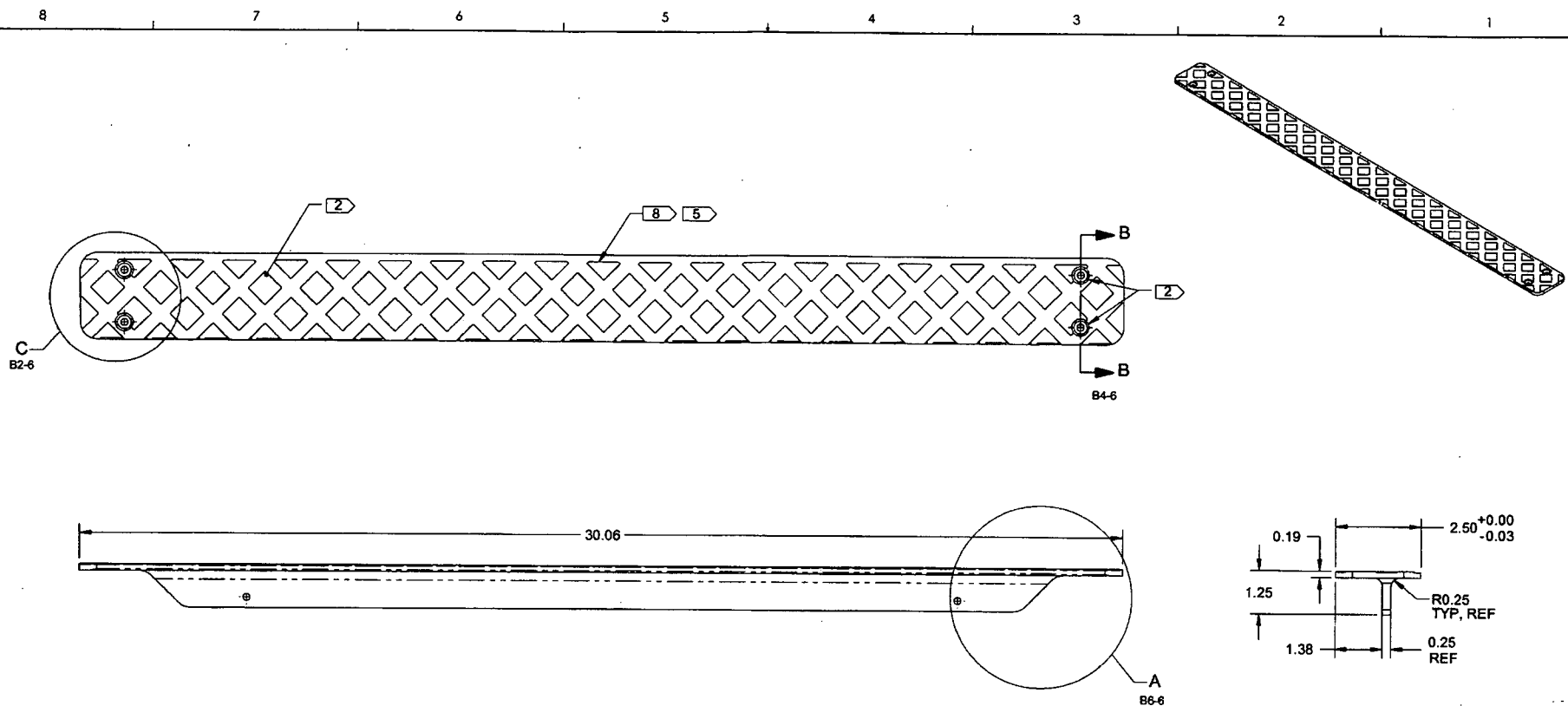
D4092-042 MAINTENANCE STEP ASSEMBLY

NOTES:

- 1) MATERIAL: N/A
- 2) FINISH: N/A
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: PER QSI 044 6.1
- 7) WEIGHT: 5.37 lbs
- 8) TORQUE SCREWS UP TO 15-25 in-lb (1.7-2.8 N-m)
- 9) GRIP CUTOUT TOWARD CENTER

DESIGN	RF	DART AEROSPACE USA, INC.	
DRAWN	RF	KENT, WA	
CHECKED	140	DRAWING NO.	REV. B
MFG. APPR.	21	D4092	SHEET 4 OF 6
APPROVED	140	TITLE	SCALE
DE APPR.	140	MAINTENANCE STEP ASSY	NTS
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2011-09-22



D4092-1 MAINTENANCE STEP
(MAKE FROM D2761 EXTRUSION)

NOTES:

- 1) MATERIAL: MAKE FROM D2761 EXTRUSION
- 2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
BLACK ANTI-SKID PAINT GRIP AREA AS INDICATED PER DART QSI 005 4.4
MASK RECTANGULAR CUTOUT PRIOR TO APPLICATION OF ANTI-SKID
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX, NOT REQUIRED TO DEBURR GRIP AREA
- 6) IDENTIFICATION: N/A
- 7) WEIGHT: 1.97 lbs
- 8) MACHINE 0.69 x 0.69 GRIP 0.030 DEEP AT 45° PATTERN 0.38 APART

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2011-09-22
JW

DESIGN	RF	DART AEROSPACE USA, INC.	
DRAWN	RF	KENT, WA	
CHECKED	140	DRAWING NO.	REV. B
MFG. APPR.	21	D4092	SHEET 5 OF 6
APPROVED	140	TITLE	SCALE
DE APPR.	140	MAINTENANCE STEP ASS'Y	NTS
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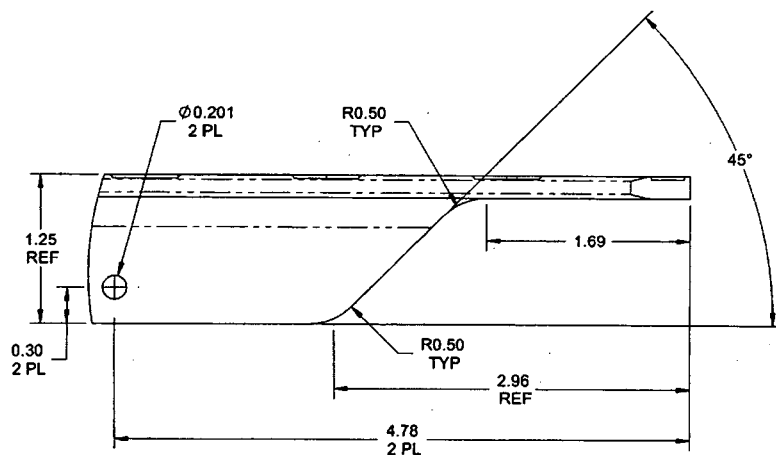
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D

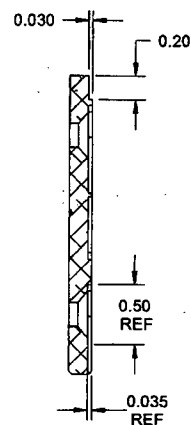
C

B

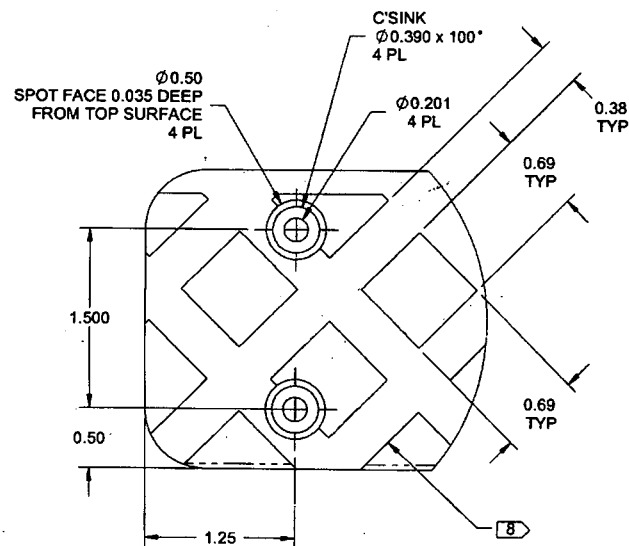
A



DETAIL A
SCALE 3X, TYP



SECTION B-B
SCALE 3X, TYP



DETAIL C
SCALE 3X, TYP

RELEASED
2011-09-22
WMO

DESIGN	RF	DART AEROSPACE USA, INC.	
DRAWN	RF	KENT, WA	
CHECKED	140	DRAWING NO.	REV. B
MFG. APPR.	21	D4092	SHEET 6 OF 6
APPROVED	140	TITLE	SCALE
DE APPR.	140	MAINTENANCE STEP ASS'Y	NTS
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8 7 6 5 4 3 2 1

DART AEROSPACE LTD		Work Order:	
Description: Maintenance Step		Part Number:	D4092-1
Inspection Dwg: D4092	Rev: B	Page 1 of 1	

FIRST ARTICLE INSPECTION CHECKLIST

Drawing Dimension	Tolerance	Actual Dimension	Accept	Reject	Method of Inspection	Comments
30.06	+/-0.030	30.06	✓		MH-07	tape
0.19	+/-0.030	.1915	✓		MH-04	Caliper
1.25	+/-0.030	1.245	✓			
1.38	+/-0.030	1.375	✓			
0.25	+/-0.030	.245	✓			
R0.25	+/-0.030	.25	✓		rad stage	-
2.50	+/-0.030	2.495	✓		MH-04	Caliper
Ø0.201	+0.005/-0.001	.203	✓			
0.30	+/-0.030	.301	✓			
4.78	+/-0.030	4.781	✓			
1.69	+/-0.030	1.69	✓			
2.96	+/-0.030	2.96	✓			
0.030	+/-0.010	.029	✓			
0.20	+/-0.030	.200	✓			
0.50	+/-0.030	.500	✓			
0.035	+/-0.010	.032	✓			
0.390 x 100°	+/-0.010 x 0.5°	.390 x 100°	✓			
1.500	+/-0.130	1.500	✓			
0.50	+/-0.030	.502	✓			
1.25	+/-0.030	1.247	✓			
0.69	+/-0.030	.683	✓			
0.38	+/-0.030	.375	✓			
0.69	+/-0.030	.683	✓			

Measured by: MH	Audited by: SS	Preliminary Approval:
Date: 14/01/04	Date: 14-01-08	Date:

Rev	Date	Change	Revised by	Approved
A	12.05.15	New Issue	KJ	
B	13.06.18	Dimension 2.96 was 2.69	KJ	

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: <u>110087</u> Part No. <u>4092-1</u> NCR No. _____	DISPOSITION Rework <input type="checkbox"/> Scrap <input checked="" type="checkbox"/> Use-as-is <input type="checkbox"/> Suspected Unapproved <input type="checkbox"/>	AGAINST DEPARTMENT/PROCESS <table> <tr> <td>Skid-tube <input type="checkbox"/></td> <td>Crosstube <input type="checkbox"/></td> <td>Water Jet <input type="checkbox"/></td> <td>Engineering <input type="checkbox"/></td> </tr> <tr> <td>Machining <input checked="" type="checkbox"/></td> <td>Small Fab <input type="checkbox"/></td> <td>Prod. Eng. Coord. <input type="checkbox"/></td> <td>Quality <input type="checkbox"/></td> </tr> <tr> <td>Thermoforming <input type="checkbox"/></td> <td>Finishing <input type="checkbox"/></td> <td>Rec/Store/Packaging <input type="checkbox"/></td> <td>Other <input type="checkbox"/></td> </tr> <tr> <td>Large Fab <input type="checkbox"/></td> <td>Composite <input type="checkbox"/></td> <td>Supplier <input type="checkbox"/></td> <td></td> </tr> </table>	Skid-tube <input type="checkbox"/>	Crosstube <input type="checkbox"/>	Water Jet <input type="checkbox"/>	Engineering <input type="checkbox"/>	Machining <input checked="" type="checkbox"/>	Small Fab <input type="checkbox"/>	Prod. Eng. Coord. <input type="checkbox"/>	Quality <input type="checkbox"/>	Thermoforming <input type="checkbox"/>	Finishing <input type="checkbox"/>	Rec/Store/Packaging <input type="checkbox"/>	Other <input type="checkbox"/>	Large Fab <input type="checkbox"/>	Composite <input type="checkbox"/>	Supplier <input type="checkbox"/>	
Skid-tube <input type="checkbox"/>	Crosstube <input type="checkbox"/>	Water Jet <input type="checkbox"/>	Engineering <input type="checkbox"/>															
Machining <input checked="" type="checkbox"/>	Small Fab <input type="checkbox"/>	Prod. Eng. Coord. <input type="checkbox"/>	Quality <input type="checkbox"/>															
Thermoforming <input type="checkbox"/>	Finishing <input type="checkbox"/>	Rec/Store/Packaging <input type="checkbox"/>	Other <input type="checkbox"/>															
Large Fab <input type="checkbox"/>	Composite <input type="checkbox"/>	Supplier <input type="checkbox"/>																

Root Cause	Date	Step	Qty	Description of work order update or non-conformance	Initial Chief Eng	Action Description	Sign & Date	Verification	QC Inspector
Design <input type="checkbox"/> Doc/Data <input type="checkbox"/> Equip/Tooling <input type="checkbox"/> Handling/Pre <input type="checkbox"/> Material <input type="checkbox"/> Operator <input checked="" type="checkbox"/> Offset/Setup <input type="checkbox"/> Process <input type="checkbox"/> Supplier <input type="checkbox"/> Training <input type="checkbox"/> Transport <input type="checkbox"/> Unapproved <input type="checkbox"/>	14/01/05	110	1	"Y" axis not positioned properly.		Scrap and Destroy replaced Batch # 80206	MM 14/01/05		

FAULT CATEGORY

Landing Gear <input type="checkbox"/> Bending <input type="checkbox"/> Centre Not Concentric <input type="checkbox"/> Cracks <input type="checkbox"/> Crimp/Kink/Ripple/Wave <input type="checkbox"/> Cuffs <input type="checkbox"/> Crushing <input type="checkbox"/> Heat Treat <input type="checkbox"/> Inspection Strip in Tube <input type="checkbox"/> Marks/Chatter <input type="checkbox"/> Turning Sequence <input type="checkbox"/> Wave/Twist in Tube	General <input type="checkbox"/> Bend <input type="checkbox"/> BOM/Route <input type="checkbox"/> Broken/Damage/Defect <input type="checkbox"/> Burrs <input type="checkbox"/> Contamination <input type="checkbox"/> Countersink <input type="checkbox"/> Cut Too Short <input type="checkbox"/> Drawing <input type="checkbox"/> Drill Holes <input type="checkbox"/> Finish <input type="checkbox"/> Fit/Function	<input type="checkbox"/> Folio/Program <input type="checkbox"/> Grain <input type="checkbox"/> Hardware <input type="checkbox"/> Inspection Incomplete/Unqualified <input type="checkbox"/> Instructions Incomplete/Unclear <input type="checkbox"/> Misaligned/off center <input type="checkbox"/> Mislabeled <input type="checkbox"/> Misread <input type="checkbox"/> Off-set <input type="checkbox"/> Out of Calibration <input type="checkbox"/> Out of Sequence	<input type="checkbox"/> Outside Dimensions <input type="checkbox"/> Over/Under tolerance <input checked="" type="checkbox"/> Part Incorrect <input type="checkbox"/> Part Lost/Missing <input type="checkbox"/> Part Moved <input type="checkbox"/> Positioned Wrong <input type="checkbox"/> Power Loss/Surge	<input type="checkbox"/> Pressure/Forced <input type="checkbox"/> Set-up <input type="checkbox"/> Temperature/Cure <input type="checkbox"/> Weld <input type="checkbox"/> Wrong Stock Pulled <input type="checkbox"/> Other
--	--	---	---	--